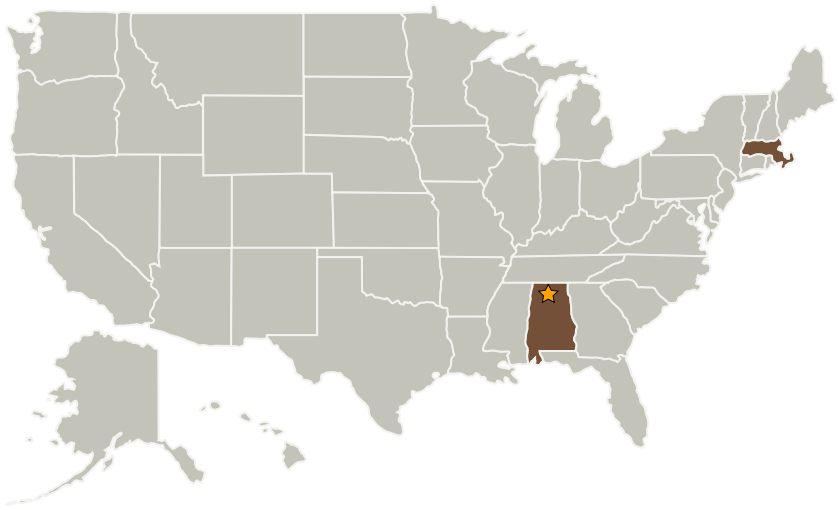
Nano-Enabled Low-Cost High-Performance UV Anti-Reflection Coatings, Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

In this program, Agiltron and the groups of Professors Rubner and Cohen at MIT propose a novel nano-porous coating for next generation NASA UV anti-reflection (AR) applications. The collaborative research leverages recent breakthroughs in nano-porous self-assembled low reflective index multilayer structures achieved at MIT, and Agiltron's recently developed mist coating processes. The proposed UV AR coatings consist of inter-connected oxide nanoparticles in the form of a 3D nanoporous network and with a rough surface morphology. This AR coating is intended to have high UV AR performance with broadband and wide acceptance angle, high transparency, long environmental stability, high scratch and abrasion resistance, high mechanical integrity, and that has not previously been attained. More ideally, this coating can be applied on large area glass and plastic substrates (polycarbonate, PMMA) using industry scale mist coating technology and low annealing temperature, leading to low fabrication cost. The feasibility of the proposed approach will be demonstrated in Phase I. In Phase II, we will test its applicability to plastic optical components, and evaluate AR performance, and scratch and abrasion resistance.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
AGILTRON Corporation	Supporting Organization	Industry	Woburn, Massachusetts

Primary U.S. Work Locations	
Alabama	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.5 Coatings